On the Mortality arising from Military Operations. By WILLIAM
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(Continued from p. 174.)

IN a comparison of the relative sickness of the French and
English armies in Spain, there are, however, several points to be
considered.   The English was essentially an army of operation,
constantly engaged in active service, the brunt of every campaign
falling principally upon it; the greater part of the French troops
consisted of armies of occupation regularly quartered in the country,
and having only to contend with guerillas and the feeble Spanish
armies, which they so frequently and easily dispersed.   A more
just comparison would be made with the army of Portugal, which,
though smaller in amount, was more constantly engaged in active
operations.   The lowest ratio of sickness in this army was 64 per
1,000, and the highest 235 per 1,000; the average being 146 per
1,000, which still is lower than the English ratio.

Another circumstance to be borne in mind is, that as the
English army was almost invariably successful, very few of its
wounded were taken prisoners; while a large number of the
wounded French having been taken, their sick lists would thereby
be proportionably diminished.

An important admission made by the Emperor Napoleon him-
self, in his Memoirs, must also be mentioned.   He relates* that,
in Egypt, he agreed with the heads of corps they should over-
charge by one third the real quantity of provisions, arms, and
clothing distributed to the troops; and he speaks of the astonish-
ment expressed by the author of an account of the French cam-
paigns in Egypt, at finding that the orders of the day showed the
army to amount to 40,000 men, although the writer had ascer-
tained from authentic facts that the real number was much less.
Napoleon continues, that in 1796 and 1797, and since (*et depuis*),
the same means were employed in order to excite exaggerated
notions of the numbers of the French forces.   The returns of
effective strength were called in the French army "*Etats de
situation,*" and I do not know whether they were included in the
orders of the day (*ordres du jour*); but if so, and if they were
dealt with in this manner, without a proportionate increase in the

* *Mémoires,* vol. viii., p. 119.

numbers of the sick, the ratio of the latter would thereby be much diminished.

Notwithstanding the great public excitement and the numerous investigations that have arisen out of the expedition to the Crimea, I have only found one return,* having a distinctly official character, to show the exact proportion of sickness in the army there. This was dated the 2nd of October, 1854, before the commencement of the siege of Sebastopol. In the *Third Report of the Crimean Committee* (Appendix, page 470), there is a "return showing the total number of men of Lord Raglan's army sick and wounded (of all arms) during each month from their landing in Turkey," giving these numbers:—

1854.			1854.		
April	. .	503	October	. .	11,988
May	. .	1,835	November	. .	16,846
June	. .	3,498	December	. .	19,479
July	. .	6,937	**1855.**		
August	. .	11,236	January	. .	23,176
September	. .	11,693	February (imperfect)		16,964

From a comparison with other returns, I find that these are not the average numbers sick during each month, but the total of those applying for assistance at the hospitals, and they cannot therefore be used to ascertain the average number sick. Several returns were published during the latter part of the war, but they appear to include only the number of sick in the Crimea, without reference to those at Scutari and elsewhere. The return dated the 2nd of October, 1854, shows that out of 34,642 non-commissioned officers and rank and file, 6,777 were sick, being at the rate of 195 per 1,000. Among these the wounded are included; and of the whole number sick, 328 only were present with the army; the remainder, with the exception of those wounded at the Alma, must therefore have been left at Varna. The wounded at the Alma were 1,539; and although many of these must have died before the 2nd of October, the news of their deaths would not probably have reached the head-quarters by that time, as they were all, immediately after the battle, sent on board the fleet for transport to Scutari. Deducting the whole of the wounded at the Alma, and the sick present with the army (together, 1,867), from the total sick (6,777), there remain for the sick at Varna 4,910, which, upon the total strength at the period of embarkation (about 35,000 men), is at the rate of 140 per 1,000, or nearly one seventh of

* *Third Report of Committee:* Appendix, p. 473.

the whole force—a greater amount of sickness than the average
of the French army of Spain, and nearly as great as the army
of Portugal while engaged in very active campaigns; this too,
although not a soldier in Lord Raglan's army had fired a shot, or
seen the uniform of an enemy.

A complete return of deaths up to the 15th February, 1855,
was laid before the Crimean Committee, and is to be found in the
Appendix to their *Second Report* (page 688).   According to this,
there died—

Of sickness, from the first landing in Turkey to the
   embarkation for the Crimea on the 6th September,   903
   1854   .   .   .   .
In the Crimea, from casualties in action .   1,481
       ,,   disease . . . 4,300
                                           5,781
In other hospitals, from disease and wounds   . . 2,167
On their passage from the Crimea, from the same causes   882

Total deaths .   .   . 9,733

From the number of casualties that actually occurred up to the
15th February, the deaths they caused should probably be increased
from 1,481 to 1,910, and the statement would then stand thus:—

	DEATHS.		
	From Casualties.	From Disease.	Total.
From the landing in Turkey to the 6th of September, 1854........	..	903	903
From the 6th of September, 1854, to the 15th of February, 1855	1,910	6,920	8,830
Total.............	1,910	7,823	9,733

Various statements were laid before the Committee, of the
numbers and dates of the reinforcements sent to the East; and I
have calculated from these, that the average strength of the army,
during the first of the above periods, was 25,000, and during the
second, 42,500, of all ranks.

Each of the periods was of five months' duration, very nearly.
The mortality in the first arose from disease alone, and was at the
annual rate of 87 per 1,000, or three fourths of that from the
same cause among the troops engaged in active service in the
Peninsula.   In the second period it was equivalent to an annual
mortality per 1,000 of

108 from casualties in action, and
391 from disease, or
___
499 from all causes;

being about double the annual ratio of deaths from casualties in the Peninsula, and 3½ times those from disease.

The Crimean Commissioners state in their *Report* (page 3), that the mortality for the seven months ending with the 30th April, 1855, appeared to amount to about 35 per cent. upon the average strength, which is equal to an annual ratio of 60 per cent., or 600 per 1,000.

I have compiled from the columns of the *Times* a classification of 4,259 deaths in the hospital at Scutari. This statement, not being derived from official returns, may perhaps be liable to error in some respects; but it is not without value for the purpose of general comparison with a similar statement of the causes of 16,970 deaths in the Peninsular army, recorded by Sir James McGrigor, viz.:—

Causes of Death.	In the Peninsular Army.		In the Hospital at Scutari.	
	Number of Deaths.	Proportion of 100,000 Deaths.	Number of Deaths.	Proportion of 100,000 Deaths.
Diarrhœa and dysentery	4,940	29,110	2,451	57,549
Fever	6,761	39,842	739	17,351
Catarrh, pneumonia, bronchitis	606	3,571	169	3,968
Gelatio	..	..	327	7,678
Wounds	3,411	20,100	238	5,588
Other causes............	785	4,626	215	5,048
Not specified	467	2,751	120	2,818
Total.........	16,970	100,000	4,259	100,000

The proportion of deaths from diarrhœa and dysentery at Scutari was double that in the Peninsula; but from fever very much smaller. This is remarkable, considering the assertion of a celebrated traveller, that the slightest imprudence or exposure leads to a fever in the Crimea.*

During Sir James McGrigor's superintendence of the medical department in the Peninsula, which lasted two years and a half, 352,272 cases were admitted into the hospitals, so that a number nearly equal to the whole force went through the hospitals twice in each year. The proportion of recorded deaths to the numbers

* *Clarke's Travels.*

treated are one in 20·8, or 4·8 per cent.; but 81,582 cases are entered as "transferred," and the results of these were, of course, unknown. Of the remainder, the deaths were 1 in 15·9, or 6·3 per cent. Out of 17,537 admissions to the hospital at Scutari, there were 3,062 deaths, being 1 in 5·73, or 17½ per cent., and 5,824 of the cases were still under treatment when the return was made up. It is probable that all the cases sent to this hospital were severe ones, while the Peninsular returns contain a large proportion that were only slight.

No person can have his attention drawn to such an enormous amount of sickness and mortality, without feeling an earnest desire to ascertain its causes, and the means of preventing it, if possible, in future.

The following observations of Mr. Edmonds, published in 1838 in his paper on the mortality of the Peninsula, derive peculiar force from the events of the last two years:—"That an English army," he said, "of 61,511 men, during a period of three years and five months, should have had 13,815 men, or 22½ per cent., constantly sick, and that no inquiry should have been instituted as to the causes of the sickness, is a serious national reproach."

In the course of the present inquiry, I have collected numerous facts, and many suggestions have occurred to my mind with respect to this part of the subject; but although they appear to me to be of great interest and importance, I refrain from laying them before the Society, partly on account of the great length of this communication, and partly because they are not of a strictly statistical character.

Battles.

The table in the Appendix No. III. contains the particulars of all the great battles in which British troops have been engaged since the commencement of the present century, excepting those that occurred in India, with respect to which I have not been able to obtain information sufficiently precise to include them in the statement.

This country has generally been entitled to the undivided glory of its naval achievements, the fleets of allied nations having rarely participated in them; but our operations upon land, in Europe at least, have almost always been carried on in conjunction with the forces of other powers.

Of the nineteen great battles included in the table, four only were fought by British armies unassisted by troops of any other nation.

From this circumstance I have been compelled, in order to give a complete view of the results of the several actions, to state, in separate divisions of the table, the loss sustained by the British only, and the total losses of the whole of each army, including British and Allies. The effective strength of the troops engaged is also given in each case, and the proportion of casualties per 1,000 deduced therefrom. In the table relating to naval engagements, I was enabled to give, with considerable accuracy, the strength of the enemy's force, and the loss that it sustained in each action, thereby furnishing materials for some useful comparisons; but it is impossible to follow the same course with respect to land battles, from the great uncertainty, in most cases, both as to the strength and casualties of the enemy. The losses sustained in actions by foreign armies are not always officially published; and, when published, the numbers given cannot always be relied upon. No dependence whatever is to be placed upon the general estimates inserted in historical works, which vary enormously, according to the prejudices or the wishes of the persons making them. The only sure guides to such information are to be found in official returns. It is, indeed, true that these may be incorrect, or may be garbled when published; but no person that has not access to accurate original returns can pretend to fix with precision the losses of an army. The English returns, as mentioned already,* give the numbers of rank and file, or, to use a common term, of bayonets and sabres only, without including the officers and non-commissioned officers; and proportionate additions for both these classes have, therefore, been made in the table. The non-commissioned officers are taken at the rate mentioned at page 86, or 72 for every 1,000 rank and file, but the officers at only 40 to 1,000 non-commissioned officers and rank and file, instead of 48, as estimated for the whole army at page 88—a reduction made in order to allow for the large numbers of officers engaged at home in what may be called the civil departments of the army. The proportion of officers adopted appears to agree with that in both the English and French Crimean armies. According to a statement from the War Department, made in Parliament, "the Admiralty had transported, from the 7th of February, 1854, to the 22nd January, 1855, 2,141 officers and 54,224 men of the English army, and 556 officers and 14,055 men of the French," being, in both cases, at the rate of 39·5 officers to 1,000 men. The precise strength of the artillery and engineers is very rarely given in the British returns, the number of guns only being stated.

* Page 86.

As the casualties happening to these corps are included in the general list, it is necessary to make an estimate of their numbers.

They have been taken at an average of 40 men per gun, which appears to be about the general proportion, allowing for those sick and absent. At the battle of Talavera, the English had 30 guns and 1,287 men of the artillery and engineers present.* At Waterloo the English artillery consisted of 191 guns and 8,166 men, exclusive of 1,240 of the engineers and field train.† Napoleon, at the same time, had 350 guns with 10,901 artillerymen, the engineers and field train amounting to 5,600 men.‡ There seems good reason to conclude that the force of the Prussian army in artillery, in the above campaign, is under-estimated in Captain Siborne's work, as he assigns only 5,303 artillerymen to 312 guns, which is not more than 17 men to each gun.

The majority of the battles recorded in the table were fought in the Peninsular War, and the strength of the armies engaged in these has been taken in each case from Sir William Napier's History. In some instances his statements have been compared with those of other writers, almost all of whom, however, have relied upon his authority. The effective strength at the battle of the Alma is accurately given from a parliamentary return,§ but I have had great difficulty in ascertaining the numbers at the battle of Inkermann. According to Lord Raglan's despatch, not more than 8,000 British troops were engaged in that action; but the returns of killed and wounded include casualties in three regiments of cavalry and twenty-six battalions of infantry, besides artillery—so that, if the despatch be correct, the infantry could not have averaged more than 270 men per battalion, a number almost incredibly small. Having no other guide, I have adopted Lord Raglan's estimate—concluding, however, that it referred to rank and file only, and making proportionate additions for officers and non-commissioned officers.

From the general result of Table III., it appears that in the nineteen battles recorded, an aggregate British force of 438,205 officers and men were engaged; that of these, 49,821 were either killed or wounded, of whom 14,517, being very nearly 30 per cent., died from the injuries they received; and that the casualties averaged 114, and the mortality 33, for every 1,000 men engaged.

Mr. Edmonds has estimated the average mortality of the British troops in four battles—Talavera, Salamanca, Vitoria, and Waterloo —at 3·9 per cent. for the officers, and 2·1 per cent. for the private

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* Alison, vol. ix., p. 422.   † Siborne, vol. i., p. 426.
‡ Siborne, vol. i., p. 433.   § *Committee's 3rd Report*, Appendix No. 10.

soldiers;* but, from two causes of error, he has underestimated the
mortality, particularly in the first three battles.   I have already
pointed out that the proportion assigned by him for deaths among
the wounded is too low; but a much greater difference in the
present case arises from his having assumed, apparently, that the
whole strength of the army in the Peninsula, as shown by the
muster rolls, was present in each action.   Thus he gives the num-
bers of British at the battle of Talavera as 39,586; but from a
return printed by Sir William Napier, it appears that, including
cavalry, infantry, and artillery, there were only 19,846 rank and
file present.†   The loss of the British in this action was very
severe, being at the rate of 213 casualties and 63 deaths per 1,000
engaged; whereas Mr. Edmonds, founding his calculations upon a
much larger number than was actually present, makes the mor-
tality 4·4 per cent. for the officers, and 2·6 per cent. only for the
private soldiers.   His estimates for Salamanca and Vitoria‌ are
below the actual mortality, from the same cause.

The lowest rate of casualties shown in Table III. is 22 per
1,000.   This was at Busaco.   The highest for the whole force
engaged in any single battle was at New Orleans, where the
British were defeated with a loss, in killed and wounded, of 317
per 1,000.   The British suffered in a greater ratio than this at
Albuera, where they had 395 per 1,000 killed or wounded.   The
casualties of the total force engaged in that battle, including both
British and Allies, were, however, only 176 per 1,000.   In nearly
all the actions fought in conjunction with allies, the greater ratio
of loss was borne by the British, their casualties averaging 114 per
1,000, while those of the aggregate force of British and Allies
averaged 98 per 1,000 only.

From the returns as to the battle of the Alma we are able to
assign the proportion of losses which there fell upon the different
branches of the service.

Battle of the Alma, 20th September, 1854.‡

	Force Engaged.	Numbers Killed and Wounded.	Ratio per 1,000 Engaged.
Cavalry..............	1,100	1	1
Infantry	22,600	1,937	86
Artillery and Engineers..	3,100	34	11
Total.........	26,800	1,972	74

* *Lancet*, 1837-8, vol. ii., p. 148.   † *Appendix*, vol. ii., p. 449.
‡ *Committee's 3rd Report*, Appendix No. 10.

In Table III. a column is inserted to show whether the action was offensive or defensive on the part of the British. This is done with a view to the elucidation of an important point in military science. " Military men," says Napoleon, " are much divided upon the question whether it is more advantageous to give or to receive the attack." It appears probable that a classification of the results achieved and the losses sustained, in a large number of battles, might assist materially in the solution of this problem, and the distinction has accordingly been made in the table. It is not supposed that the number of actions there recorded is sufficient to lead to a decisive conclusion ; but it is one of the objects of the present paper to point out, in addition to the results actually established, those that might be attained by military statistics.

Among the latter of these, the determination of the relative efficiency of the different weapons of warfare is one to which sufficient attention appears hardly to have been paid. The great object of all military organization must be the fullest development of the destructive powers of troops. To this end their equipment and training, as well as their formation and discipline—everything, in fact, connected with tactics and strategy—must be directed ; and it becomes, therefore, of importance to ascertain the relative effects of the different arms employed.

Some information upon this subject may be obtained from a return, furnished by the surgeon of the Scots Fusileer Guards, of the nature of the wounds received by the men of that regiment at the battle of Inkermann, the 5th of November, 1854.

Wounded by	SEVERELY.		SLIGHTLY.		Total Number.	Proportion per 1,000.
	Total Number.	Proportion per 1,000.	Number.	Proportion per 1,000.		
Bayonet	3	46	4	190	7	59
Gunshot	62	954	17	810	79	658
Contusions	..	..	..	..	34	283
Total......	65	1,000	21	1,000	120	1,000

It has been confidently and repeatedly asserted that the victory at Inkermann was won by the bayonet, which it is said was there more extensively employed than on any other occasion since the battle of Maida. In the Russian official account of the action it is called an embittered bayonet contest ; and it is boasted that their

troops had not only challenged, but frequently put to rout, the well
fed and powerful British soldiers, with what the latter considered
their own peculiar weapon.

The brigade of Guards was more constantly and closely engaged
in this battle than any other portion of the army. This is proved
by the fact, that out of 2,382 casualties suffered by twenty-six
battalions, 594, or one fourth of the whole, were borne by the three
battalions of Guards; and yet we find that in one of these, not-
withstanding the assertions referred to, the proportion of bayonet
wounds received among those returned as wounded was less than
6 per cent. of the whole.

The popular notion in England is, that the efficiency of the
British infantry depends principally upon the determination with
which they use the bayonet. It does not, of course, come within
the objects of this paper to discuss questions of military tactics,
except to show how far they may be illustrated by military sta-
tistics; but if it were otherwise, there would be no difficulty in
proving that the opinion in question is entirely a delusion, and
that, as an able writer has already pointed out,* the almost uniform
success of the British infantry during the last war arose in a great
measure from the fact that the formation in line they invariably
adopted in action produced a much greater development of musketry
fire than the formation in column adopted by their opponents; and,
moreover, that so far from their victories having been due to the
bayonet, a reliance upon that arm as the principal weapon of
offence was the entire cause of two out of the very few severe
defeats they suffered during the war, one of the two being the
most disgraceful check ever experienced by the British arms.

The conclusions here pointed out are in accordance with all the
facts of history, which show that nations possessing the most effi-
cient missile weapons have always been the most successful in war.

From the statistics of the battle of Balaklava, another proof
may be obtained of the relative destructive powers of cannon and
musketry compared with those weapons which the French include
in the comprehensive expression—" *les armes blanches.*"

The British cavalry in that action consisted of a light and a
heavy brigade, each of which made a charge in the course of the
day. The heavy brigade were opposed by a body of Russian cavalry
only, which, although it was very superior in numbers, they at-
tacked and defeated. The casualties they suffered were of course
principally produced by the weapons of cavalry, lances and sabres.
The charge of the light brigade is too well known to need descrip-

* *Revelations of Russia*, vol. ii., p. 50.

tion—they were nearly destroyed, suffering from every description of weapon used in modern war, particularly from artillery.

The following is a statement of the relative proportion of deaths among the casualties of each :—

	Total Casualties.		Proportion to a Total of 1,000.	
	Heavy Brigade.	Light Brigade.	Heavy Brigade.	Light Brigade.
Killed........	9	160	85	569
Wounded	97	121	915	431
Total......	106	281	1,000	1,000

It is not surprising that the casualties in the light brigade should have been in so much larger a proportion; but it is a remarkable fact, that more than one half of those injured were killed outright, while in the heavy brigade only 1 in 12 of those injured were killed.* The ordinary proportion in land battles is 1 killed to every 5 casualties.

Sieges.

The Table numbered IV. in the Appendix contains details as to various sieges in which the troops of this country have engaged in the course of the last hundred years, that of Sebastopol being included. I have collected, as far as they were attainable, the particulars of all the English sieges that occurred in that period, excepting such as took place in India, but I have only inserted in the table those with respect to which the information obtained is sufficiently precise to lead to definite conclusions.

The date, duration, and result of each siege is given, with the force of the besiegers and the number killed and wounded among them, together with the ratio of the casualties to 1,000 men engaged. The strength and casualties of the garrisons are also stated, where they could be ascertained.

A column in the table shows, as to each siege, whether it was undertaken by the British alone or in conjunction with allies; but, in the latter case, the aggregate numbers only of the besieging force, and of the casualties suffered, are given, without reference to the national distinctions made in Table III.

The severe criticisms of some French writers upon the methods

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* In this action, private John Dryden, of the 11th Hussars, forming part of the light brigade, received 24 lance and 7 sabre wounds, and, being left on the ground for dead, was taken prisoner. He nevertheless recovered, and, having been exchanged, was doing duty with his regiment in January, 1856. This was certified in a letter from the surgeon of the 4th Dragoon Guards, published in the newspapers.

of attacking fortified places adopted by our engineers, make it an object of interest to compare the results of the systems of the two nations; and information with respect to seven French sieges, similar to that given as to the English, has accordingly been inserted in a continuation of the table. The facts as to the English sieges in the Peninsula were taken from Sir John Jones' Journals; and those as to the French, from the *Journaux, etc.* of Captain Belmas.

The difference between the modes of attack above alluded to consisted in this—the French, proceeding according to the strict rules of art, pushed their approaches so close to the body of the place, that, when a breach was effected, the success of the assault was secured, and the garrison were therefore compelled to capitulate; while the English, less scientific or less patient, breached the walls, and sent forward their troops to the attack from such a distance as to expose them to the certainty of a heavy loss as well as to the risk of failure, the disadvantages to the assailants being generally such as to encourage the garrison to make a vigorous resistance. This course, although less sure than the other, and involving a much greater sacrifice of life, effected, when successful, a saving of time.

Accordingly, we find that the average duration of the English sieges recorded, exclusive of that of Sebastopol, was only $13\frac{1}{5}$ days, that of the French being $33\frac{5}{7}$ days; but that, while the casualties of the former averaged 113 per 1,000, those of the latter were only 73 per 1,000 of the force engaged.

For the purpose of a more complete comparison, I have classified the fortresses captured by both nations under the heads of those that capitulated and those taken by assault, showing the

Average Results of Fourteen Successful Sieges.

Places taken by	Number of Sieges.	DURATION IN DAYS.		Aggregate Force Employed.	CASUALTIES.	
		Total.	Average.		Total.	Per 1,000.
Capitulation—						
French armies....	4	143	$35\frac{3}{4}$	154,800	6,633	43
English armies...	4	93	$23\frac{1}{4}$	47,900	2,403	50
	8	236	$29\frac{1}{2}$	202,700	9,036	44
Assault—						
French armies....	1	28	28	21,500	4,209	196
English armies...	5	59	$11\frac{4}{5}$	63,700	11,228	176
	6	87	$14\frac{1}{2}$	85,200	15,437	181

Here we see that although the places assaulted were taken, on an average, in half the time required to gain possession of those that capitulated, the ratio of loss suffered by the besiegers before the former was quadruple that before the latter.

An unusual opportunity for comparing operations of this description occurs in reference to the Peninsular War. The two fortresses of Badajoz and Ciudad Rodrigo were each of them successively besieged and captured by the French and English armies. The former, with an average force of 22,500 men, obtained possession of both places by capitulation, at the cost of 2,830 killed or wounded, the time occupied in the two sieges being 65 days. The English took both places by assault; their average force was 21,200, and their loss 5,820 killed or wounded in the two sieges, which lasted 32 days in all. It is a curious fact, that the respective losses are very nearly in the inverse ratios of the respective times $\frac{1}{32} : \frac{1}{65} :: 5,820 : 2,865$, the last number being only 35 in excess of the French casualties.

The English engineers have been accused of needlessly sacrificing the lives of the soldiers by their methods of attack, and it is therefore but justice to them to point out that they did not hesitate to expose their own. This is shown by the following

Comparative Statement of the Casualties among Officers of the Engineers and Artillery at various Sieges.

	ENGINEERS.				ARTILLERY.			
	Employed.	Killed.	Wounded.	Total Casualties.	Employed.	Killed.	Wounded.	Total Casualties.
Badajoz (1st siege)	21	5	3	8	§	1	3	4
Ciudad Rodrigo	19	2	5	7	14	..	2	2
Badajoz (2nd siege) ..	24	4	7	11	38	6	8	14
Forts of Salamanca....	3	..	..	..	14	1	1	2
St. Sebastian (1st siege)	22	1	4	5	39	1	1	2
„ (2nd siege)	17	3	3	6	54	..	1	1
Total..........	106	15	22	37	159	8	13	21
Ratio of casualties to a strength of 1,000	349				132			

At the second siege of Badajoz nearly one half the engineer officers employed were either killed or wounded.

The siege of the citadel of Antwerp in 1832, described in the French division of Table IV., may be taken as a measure of the smallest amount of loss with which a place strongly fortified and

sufficiently garrisoned and defended can be captured. The force
of the besiegers was very large, the means at their disposal ample,
and they were under no necessity to hurry their operations, as
there was not the slightest prospect of the place being relieved.
The garrison, therefore, had no inducement for extraordinary ex-
ertion, more particularly as the only motive for the defence was a
foolish point of honour. The siege lasted 24 days; and the loss of
the French in killed and wounded, out of a force of 66,500 of all
arms, was only 803, or 12 per 1,000. The actual deaths probably
did not exceed 210, or 3·16 per 1,000. The loss of the garrison in
killed and wounded was 110 per 1,000.

There is, however, one point which it is necessary to bear in
mind as to the relation between the duration of sieges and the losses
they cause. The labours of the trenches are very harassing to the
soldiers, and produce an increase of sickness and consequent mor-
tality among them; these are, of course, diminished by shortening
the operations; and, in order to arrive at correct conclusions, we
must know the number of deaths from disease occurring during a
siege, as well as those from casualties in action. If it be true, as
some persons have supposed, that Sebastopol might have been
captured by a vigorous assault at the time the Allies first appeared
before it, when its formidable defences had not been begun, there
is hardly any conceivable amount of loss consistent with the success
of the attempt that would not have been productive of a saving of
life.

The siege of this place has been included in the table on account
of the great interest it naturally excites at present, although there
are some points connected with it upon which further information
is required. Even that we possess as to the British portion of the
besieging force, which is alone included in the table, is imperfect,
there being no returns to show its average strength during the
siege. At page 203 I have stated the grounds upon which I esti-
mated this at 42,000 men for the first five months. For the whole
period I have taken it at 50,000 men, which is not, perhaps, far
from the truth. On the 9th of October, 1855, it was 54,600, and
on the 16th, 53,500, men;* but these numbers include rank and
file only, and must be considerably increased for officers and non-

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* Although the military authorities appear to have carefully, and very properly,
avoided publishing direct information as to the strength of the army, the reports of the
head of the Medical Department, inserted in the *Gazette*, occasionally stated not only the
numbers of deaths and admissions to the hospitals, but the exact ratios those numbers bore
to the total strength, which could, of course, be ascertained from such data by a simple
arithmetical process.—See *Dr. Hall's Report*, dated 16th October, 1855.

commissioned officers.   The army, at the last of the above dates, had probably been reduced by the transfer to Scutari of a large number of wounded men.

Table No. IX. in the Appendix contains a complete classification of all the returns of killed and wounded from the landing of the army in the Crimea to the 8th September last, when the town of Sebastopol was evacuated by the Russians.   I cannot be certain that there are no errors in this table, because I have unfortunately not been able to verify it in the manner I intended; but it has been carefully drawn up, and it agrees very nearly in its general results with a statement published some months ago in the newspapers. In this the total numbers of killed and wounded for the period named were given at 13,849, while by Table IX. they appear to have been 13,880.   The method of classification adopted will be best understood by the following summary, in which the estimated mortality is founded on the numbers killed, increased for deaths among the wounded and missing, calculated upon the principles laid down in page 152 :—

Summary of the Returns of Killed and Wounded in the British Army in the Crimea from the 19th September, 1854, to 8th September, 1855.

		Staff.	Artillery, Engineer, and Train.	Cavalry.	Infantry.	All Arms.	Officers.	Non-Commissioned Officers and Rank and File.
	Siege duties	1	504	. .	4,060	4,565	154	4,411
	Assaults	10	153	. .	4,233	4,396	290	4,106
	Total siege . .	11	657	. .	8,293	8,961	444	8,517
	Battles	30	171	398	4,320	4,919	297	4,622
	Total	41	828	398	12,613	13,880	741	13,139
	Estimated deaths						223	3,973
Proportion in 100,000.	Siege duties .	22	11,040	. .	88,938	100·000	3,374	96,626
	Assaults	227	3,480	. .	96,293	100·000	6,597	93,403
	Total siege	123	7,332	. .	92,545	100·000	4,955	95,045
	Battles	610	3,476	8,092	87,822	100·000	6,038	93,962
	Total	295	5,966	2,868	90,871	100·000	5,339	94,661
	Proportions of estimated deaths						5,315	94,885
	Estimated proportions of numbers serving						3,798	96,202

A portion of the deaths among wounded officers was ascertained

from an actual return,* and the remainder estimated at $\frac{1}{12}$ of the wounded—a proportion agreeing, within a small fraction, with the facts shown in the return. The deaths among the wounded non-commissioned officers and rank and file are taken at $\frac{1}{8}$ of the whole; but it is greatly to be feared, from the various reports as to the state of the hospitals, that the mortality exceeded that proportion, particularly in the earlier part of the siege.

As we have no information respecting the average strength of the different classes included in the summary, the interest of the facts it contains is greatly diminished. The estimated proportions of officers and men serving are calculated according to the numbers of each class stated to have been despatched to the seat of war up to the 22nd of January, 1855 (*see* page 206), amounting in the whole to 56,365. In the absence of accurate returns of the average numbers serving, a comparison of these proportions with the relative casualties gives the nearest approximation we are able to make to the ratios of the latter borne by each class. So far as we are able to judge, the peculiarity pointed out at page 168, as to the greater proportion of casualties sustained by the officers, has been fully experienced in the Crimea. If the estimate as to the relative strengths in officers and men be correct, the officers formed 3·798 per cent. of the whole force, but the average proportion of casualties to that class was 5·339 per cent. In the ordinary siege duties the casualties to officers were 3·374 per cent. only, being in a less proportion than their numbers; in the battles the ratio rose to 6·038 per cent., and in the assaults to 6·597 per cent. The proportion of total deaths to 1,000 casualties among officers in the Crimea was 301, a much greater number than during the period (1793–1815) included in Table II., when it was only 234. The ratios of deaths among wounded officers appear to have been exactly the same in both periods; but the proportions returned as killed vary considerably, being 164 officers killed to 836 wounded from 1793 to 1815, and 233 killed to 767 wounded in the Crimea. The proportion of killed among the men was nearly the same in both wars, being 193 to 1,000 casualties in the first, and 190 to 1,000 in the second.

The protracted resistance which the Russians were enabled from peculiar circumstances to make at Sebastopol, is supposed by many to have been the result of discoveries in military engineering, and is adduced in support of an opinion that a new system of fortification, founded upon the exclusive use of earthworks, has been invented,

* *Parliamentary Papers*, 204, 1855.

which will have the effect in siege operations of neutralizing the superiority of the attack, hitherto so universally admitted. These views, however, are erroneous. The value and the disadvantages of earthworks in fortification were as fully appreciated before as they have been since the siege of Sebastopol, which has not elicited any new principles, although it has amply confirmed the soundness of the leading rules previously laid down by the best authorities in military science.

(*To be continued.*)

FOREIGN INTELLIGENCE.

GERMANY.—*The progress and position of Assurance Companies in Germany in the Year* 1855.—By Wilhelm Lazarus, of Hamburg, Corresponding Member of the Institute of Actuaries. (Translated and abridged by S. B., from Hubner's *Jahrbuch für Volkswirthschaft und Statistik*).

N.B.—The accounts are given in Prussian thalers, which may be converted into English money at the rate of 6⅔ = £1.

If we desire to present a tableau of the position of assurance in Germany, we find ourselves obliged to have recourse to the published accounts and balance-sheets of the various Assurance Companies. The accounts of the various Companies, however, are not only given in such a form as to have no agreement one with the other, and thus make any comparison difficult; but several of them afford no explanation upon the most interesting and important points, and render it therefore in many respects impossible to draw satisfactory and complete conclusions. In some, the principal data are wanting; in others, totally different things are brought together under a single head. Such an arrangement is so much the more to be deplored, as there is little reason to suppose that any substantial grounds exist for it. It produces benefit to no one, hinders scientific research, and limits the managers of the different Companies to making profitable use only of their own peculiar experience for the basis of their operations.

In the branch of life assurance there is needed especially the separation of the different classes from each other. Under the idea of life assurance we comprehend in general three totally different kinds of assurance—

1. Assurance in the event of living.
2. Assurance in the event of death.
3. Survivorship assurances of both kinds.

Several Companies carry on only the first class of business; several only the second; others all three; but in few of them do we find their accounts distinguishing the three classes. The difference in the form of accounts makes it also difficult to set forth clearly and fully, in a tabular form, the condition of life assurance and Life Assurance Companies.